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Conclusion

109. (New) The method of claim 107, wherein the platen includes a conductive member positioned within the platen, and coupling a signal to the platen further comprises coupling a signal to the conductive member.

110. (New) The method of claim 107, wherein coupling a signal includes coupling a current to the platen.--

REMARKS

Claims 89-94 have been presented for examination. Claims 89-94 have been rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,261,958 to Crevasse et al. ("Crevasse"). The Examiner has also rejected claims 89-94 under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,244,941 to Bowman et al. ("Bowman").

The disclosed embodiments of the invention will now be discussed in comparison to the applied references. The discussion of the disclosed embodiments, as well as the differences between the disclosed embodiments and the subject matter described in the applied references do not define the scope or interpretation of any of the claims. Instead, such discussed differences are offered merely to help the Examiner to appreciate important claim distinctions as they are discussed.

The disclosed invention is generally directed to methods and devices for releasably attaching a polishing pad to the platen of a planarization machine used to planarize a semiconductor wafer. In a pertinent embodiment, the platen of the planarization machine may include a conductive plate positioned within the platen that may be connected to an electrical signal source. The planarization medium may further include a support member that has a polishing pad attached to the support member. The electrical signal source may be a voltage capable of charging the conductive plate so that a planarization medium positioned adjacent to the conductive plate may be electrostatically attracted to the platen while the voltage is applied. As a result, the pad is retained on the platen by electrostatically attracting the support member to

the platen. To augment the electrostatic attractive force, the support member may optionally include a locking device that engages a mating portion formed in the platen that resists vertical and/or lateral motion of the support member relative to the platen.

An additional embodiment of the disclosed invention includes a polishing pad having a plurality of conductive particles distributed within the pad that may be electrostatically or electromagnetically attracted to the platen. When the polishing pad is electromagnetically attracted to the platen, the electrical signal source includes an electrical current that passes through the conductive plate to produce the attractive force between the platen and the particles distributed in the polishing pad. The particles may be distributed in the pad in a uniform manner, or they may be non-uniformly distributed. For example, the particles in the pad may be concentrated in a portion of the pad that is adjacent to the platen in order to enhance the electromagnetic or electrostatic attractive forces between the pad and the platen.

In rejecting the claims identified above, the Examiner has cited the Crevasse reference, which discloses an electromagnetic polishing pad retention apparatus. Referring to Figure 3 of the Crevasse reference, the differences between the disclosed embodiments and the Crevasse apparatus are readily understood. An electromagnet 54 is positioned within a platen 40. The electromagnet 54 is coupled to a current source through a switch 56. The polishing pad 32 is attached to a magnetic backside layer 36 that is, in turn, attracted to the platen 40 when the electromagnet 54 is connected to the current source through the switch 56. The layer 36 is disclosed as a substantially planar member that is detachable from the platen by interruption of the current. The Crevasse reference, however, fails to disclose that the layer 36 may be replaced by a plurality of conductive particles distributed in the pad 32, as disclosed in an embodiment of present application. Further, Crevasse makes no mention of retaining the layer 36 on the platen 40 by means of electromagnetic attractive forces.

The Examiner as further cited the Bowman reference in rejecting the instant claims. Bowman similarly discloses an electromagnetic polishing pad retention apparatus. With respect to the pertinent teachings in Bowman, the applicants respectfully assert that the disclosure of Bowman is substantially identical to the disclosure in the Crevasse reference, as will be briefly described. Referring to Figure 6, a plurality of electromagnetic elements 338 are positioned in the platen 328 that are coupled to a current source through a switch 340. A top

plate member 332 is positioned on the platen 328, that further includes a polishing pad 326 that is attached to a surface of the member 332. When a current is applied to the electromagnetic elements 338, an electromagnetic attractive force is developed between the top plate member 332 and the platen 328. Bowman, however, also fails to teach that the member 332 may be replaced by a plurality of conductive particles distributed in the pad 326, or that the polishing pad may be retained on the platen by electrostatic attractive forces.

Turning now to the specific claim language, patentable differences between the cited references and the disclosed embodiments of the present invention will be pointed out. Claim 89, as amended, recites in pertinent part, "A method for removably attaching a planarizing medium to a platen of a planarizing machine...comprising...applying a signal to the platen that produces *an electrostatic attractive force* between the platen and the planarizing medium." (Emphasis added). As noted above, neither of the applied references disclose removably attaching the polishing pad by producing an electrostatic attractive force between the polishing pad and the platen. Therefore, claim 89 is allowable over the cited references. Further, claims that depend from claim 89 are similarly allowable based upon the allowability of the base claim and further in view of the additional limitations present in the dependent claims.

Claims 99 through 110 are new. No new matter has been introduced in presenting these claims. The Examiner is referred to page 14, lines 12 through 30 and page 15, lines 1 through 15 for the disclosure of the subject matter recited in these claims.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made".

All of the claims remaining in the application are now clearly allowable.
Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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Enclosures:

Fee Transmittal Sheet (+ copy)

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

89. (Amended) A method for removably attaching a planarizing medium to a platen of a planarizing machine, comprising:

applying a signal to the platen that produces an electrostatic attractive force between the platen and the planarizing medium.

91. (Amended) The method of claim 89 wherein the platen includes a conductive plate positioned within the platen, and applying [the] a signal includes providing a signal to the conductive plate positioned within [passing an electrical current through] the platen, [and attracting the planarizing medium via an electromagnetic force.]

92. (Amended) The method of claim 89 wherein the planarizing medium includes a polishing pad and a support member and applying a signal includes applying a signal that produces an electrostatic attractive force between the platen and the support member.

93. (Amended) The method of claim 89 wherein the planarizing medium includes a polishing pad having conductive particles and applying a signal includes applying a signal that produces an electrostatic attractive force between the platen and the conductive particles.

94. (Amended) The method of claim 89 wherein applying a signal includes applying a voltage to the platen, [that causes an electrostatic attraction between the platen and the planarizing medium.]

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